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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jeff Lloyd
Saliwanchik, Lloyd & Saliwanchik
2421 N.W. 41st Street Suite A-1
Gainesville,, FL 32606-6669

EXAMINER
LI, QIAN J

ART UNIT	PAPER NUMBER
1632	13

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/593,629	CAMERON ET AL.
	Examiner	Art Unit
	Q. Janice Li	1632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 June 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
4)☐ Interview Summary (PTO-413) Paper No(s) _____
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other

DETAILED ACTION

The amendment filed on July 29, 2002 has been entered as Paper # 12. Claims 1-7, 13-17, and 19-24 have been canceled. Claims 25-55 are newly submitted, pending and under current examination.

Unless otherwise indicated, previous rejections that rendered moot in view of the amendment to pending claims will not be reiterated.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 40-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 40-49 are vague and indefinite because of the claim recitation, "organizing the Sertoli and the non-Sertoli cells", it is unclear who is organizing the cells and means of the organization. Claim 42 recites "the step of segregating the Sertoli cells away from the therapeutic cells", since the Sertoli cells and therapeutic cells are usually isolated and processed separately before they are combined, it is unclear the timing and means of segregating. Claim 43 recites "inducing the epithelization and polarization of the Sertoli cells", however, it is unclear how the epithelization and polarization of the Sertoli cells is induced. Thus, the metes and bounds of the claims are

unclear. Method claims need not recite all operating details but should at least recite positive, active steps so that the claims will set out and circumscribe a particular area with a reasonable degree of precision and particularity and make clear what subject matter that claims encompass as well as make clear the subject matter from which others would be precluded, *Ex parte Erlich*, 3 USPQ2d 1011 at 6.

Claim 44 recites the limitation "said induction". There is insufficient antecedent basis for this limitation in the claim.

Claims 50-55 are vague and indefinite because the claim language. Claim 50 provides three steps, the third step (transplanting) appears to be conducted by the artisan practicing the invention whereas each of the first two steps is a passive process of the cellular behavior, it is unclear how the artisan could form a biochamber, and the means of incorporating, thus, the metes and bounds of the claims are unclear.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention

WRITTEN DESCRIPTION REQUIREMENT

The prior rejection of claims 1-7, 13, 16, 19, 20-24 under 35 U.S.C. 112, first paragraph has been modified in view of the amendment, and the rejection now applies to claims 25-55.

In response to issues raised in the Office action paper #10 concerning the actual structure of the claimed biochamber, Applicants argue in Paper #12 that figures 4 and 5 are not intended to depict the biochamber constructs of the claimed invention.

The argument is not persuasive because the structure in figures 4 and 5 are clearly made by the instantly claimed methods, they should, but not match the description of the biochamber recited in the claims.

The new claims have a further limitation, "wherein said Sertoli cells are arranged as a monolayer", however, only the diagram, not the photographs illustrated such a monolayer, and the specification fails to teach how to control the culture condition so that only a monolayer of Sertoli cell wall is formed. The skilled artisan could not reasonably practice the invention without undue experimentation.

Paper # 12 is non-responsive to prior rejection of claim 16, now the rejection applies to claim 44, which recites "adding a compound which causes epithelization and polarization". However, the specification fails to teach what are the compounds.

For the reasons of record and those set forth above, the instant specification fails to meet the written description requirement set forth under 35 U.S.C. §112, 1st paragraph.

ENABLEMENT REQUIREMENT

The prior rejection of claims 1-7, 13, 16, 19, 20-24 under 35 U.S.C. 112, first paragraph has been modified in view of the amendment, and the rejection now applies to claims 25-55.

In paper #12, Applicants indicated that the rejection with respect to lack of adequate written description has been addressed by the claim amendment. However, as indicated in the preceding section, the issues have not been fully addressed.

In response to concerns of therapeutic aspects of the claimed method, applicants submitted Luca et al publication as support, and argue that fig. 6 of the article has shown that the presence of Sertoli cells actually increased the survival of the islet grafts post transplantation.

The argument has been carefully considered but found not persuasive because Luca et al use co-microencapsultion of Sertoli cells, not co-cultures as claimed in the instant application. *Spaulding* (US 6,001,643) teach that oxygen supply for encapsulated implants is still unknown and would affect the survival of the therapeutic cells of interest (column 11, lines 15-50). The specification fails to teach whether and how oxygen diffusion occurs in the claimed biochamber, wherein the therapeutic cells are surrounded by layers of Sertoli cells, thus said wall would be a significant barrier for oxygen diffusion. Therefore, even the therapeutic cells survived immune rejection, they could die of apoptosis. The specification fails to teach how to overcome the aforementioned difficulties in the art. It would have required undue experimentation for the skilled artisan intending to practice the instant invention.

Further, although the cited Willing et al reference and US patents cited following acknowledge the Sertoli cell co-culture would enhance the non-Sertoli cell survival, the instant claims embrace a therapeutic method with much broader scope than the cited

reference as analyzed in Paper #10, neither the specification nor the cited references support the full scope of therapeutic aspect of the claims.

For the reasons of record and those set forth above, the instant specification fails to meet the statutory enablement requirement set forth under 35 U.S.C. §112, 1st paragraph.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 25-30, 33-40, 42, and 46-55 are rejected under 35 U.S.C. 102(b) as being anticipated by *Selawry* (US 5,843,430).

Claims 25-30 and 33-39 are drawn to a biochamber comprising a lumen and an outer wall, wherein said outer wall comprises Sertoli cells and defines said lumen, wherein the biochamber further comprises a plurality of non-Sertoli cells contained with in said lumen, wherein the non-Sertoli cells are pancreatic islet cells. Claims 40, 42, and

46-49 are drawn to a method of making biochambers comprising the step of co-culturing Sertoli cells and non-Sertoli cells such that the Sertoli cells would organized to form an outer wall defining a lumen, and the non-Sertoli cells are contained within the lumen. Claims 50-55 are drawn to a method of transplanting said biochamber.

Selawry teaches a method of co-culturing Sertoli cells with pancreatic islet cells (column 8, lines 39-43; and column 18, lines 44-46). *Selawry* teaches that the Sertoli cells are first cultured for three days before co-cultured with isolated islet cells (segregating away from the non-Sertoli cells before the Sertoli cells and the non-Sertoli cells are organized, column 18, lines 47-62) and transplanting the co-culture to diabetic rats (example 6). Even though, *Selawry* does not describe the histological features of the co-culture product, the method steps of *Selawry* meet the instant claim limitation, thus, the end product would intrinsically have the characteristics recited in claims 25-30 and 33-39. Therefore, *Selawry* anticipates these claims.

Please note that intended use limitation "making a biochamber" bears little weight on the determination of novelty of the invention. In this case, for claim 40, the limitation "a method of making a biochamber" does not carry patentable weight in the determination of anticipation for the claimed process and products. This is because a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. **In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art.** See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Please also note that thePatent Office does not have the facilities for examining and comparing applicant's product with the product of the prior art in order to establish that the product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is upon the applicant to prove that the prior art products do not necessarily or inherently possess characteristics of claimed product, which requires factual evidence demonstrating that actual, unobvious differences exist and to establish

patentable differences. See Ex parte Phillips, 28 USPQ 1302, 1303 (BPBI 1993), In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ2d 1922, 1923 (BPAI 1989).

Claims 25-40, 42, and 46-55 are rejected under 35 U.S.C. 102(e) as being anticipated by *Sanberg et al* (US 5,942,437).

Sanberg et al teach a method of co-culturing Sertoli cells with therapeutic cells (abstract) including islet cells, neurons (column 1, line 33), adrenal chromaffin cells (column 2, lines 12-13), embryonic dopaminergic cells (column 2, line 28), and NT2 neuronal cells (column 11, lines 20-39). *Sanberg et al* go on to teach that the Sertoli cells are first cultured for two days before co-cultured with non-Sertoli cells (segregating away from the non-Sertoli cells before the Sertoli cells and the non-Sertoli cells are organized, column 12, lines 14-42) and transplanting the co-culture into a host (examples 1-6). Even though, *Sanberg et al* do not describe the histological feature of the co-culture product, the method steps of *Sanberg et al* meet the instant claim limitation, thus, the end product would intrinsically have the characteristics recited in claims 25-39. Therefore, *Sanberg et al* anticipate these claims.

Claims 25-30, 33-42, and 46-49 are rejected under 35 U.S.C. 102(e) as being anticipated by *Spaulding* (US 6,001,643).

Spaulding teaches a method of co-culturing Sertoli cells with pancreatic islet cells using *microgravity* method (column 20, lines 18-26). *Spaulding* teaches that the Sertoli/islet constructs (co-culture product) would be less immunogenic, wherein the

Sertoli cells are obtained with art-known method. Even though, *Spaulding* does not describe the histological features of the co-culture product, the method steps of *Spaulding* meet the instant claim limitation, thus, the end product would intrinsically have the characteristics recited in claims 25-30 and 33-39. Therefore, *Spaulding* anticipates these claims.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Q. Janice Li whose telephone number is 703-308-7942. The examiner can normally be reached on 8:30 am - 5 p.m., Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah J. Reynolds can be reached on 703-305-4051. The fax numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of formal matters can be directed to the patent analyst, Dianiece Jacobs, whose telephone number is (703) 305-3388.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235. The faxing of such papers must conform to the notice published in the Official Gazette 1096 OG 30 (November 15, 1989).

Q. Janice Li
Examiner
Art Unit 1632

QJL
October 18, 2002

ANNE M. WEHBE PH.D
PRIMARY EXAMINER